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JPL D-25633

James Webb Space Telescope (JWST)

Mid-Infrared Instrument (MIRI)

INFORMATION MANAGEMENT/CONFIGURATION MANAGEMENT PLAN (IMCMP)

17 March 2004

Draft

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Change Log

Revision	Issue Date	ECR Reference(s)	Change Page(s)
Baseline	2/21/03	N/A	ALL
Preliminary	10/22/03	N/A	ALL

Section	Chng by	Date	Change
Change Log TBx Log Document page headers	GBG by SE	06 Nov 03	Cosmetic changes to document to conform with Project standard: 1. changed document title & acronym so they match {IM/CMP) 2. added document header 3. added change log with repeating column header 4. added TBD/TBR/TBS log with repeating column header 5. added TBDs, TBRs and TBSs 1 - 18 to log 6. page numbering to: a. change log through TOC = Roman Numerals b. document body text starts with page 1 7. generated new TOC
TBx log	SE	19 Nov 03	Added items 19 - 24
Title Page	SE	19 Nov 03	Change all referances of "Information & Configuration Management Plan (I&CMP)".to "Information Management/Configuration Management Plan (IMCMP)
Title Page	SE	19 Nov 03	made the "Prepared By:" font match the rest of the names
TOC	SE	19 Nov 03	made the appendix page numbers right justified
1.1	SE	19 Nov 03	Made "User roles and responsibilities for managing, maintaining, and using the PIMS" a bulleted item
1.1	SE	19 Nov 03	Added "EC" to acronym table
1.1	SE	19 Nov	added TBS to acronym table for definition of EC

Change Log

Section	Chng by	Date	Change
		03	
4.3	SE	19 Nov 03	remove the word "Project" preceding PIMS
4.3.2	SE	19 Nov 03	remove the word "Project" preceding the acronym PM
4.4.1	SE	19 Nov 03	added TBR to last bullet: "released information in PDMS" is not complete since there are released documents in Docushare for MIRI
4.7.1	SE	19 Nov 03	added TBD to MIRI Project Document List, XXX-XXX-XXX
4.7.3	SE	19 Nov 03	added "no TBDs, TBRs, or TBSs" to " It's content shall be complete "
4.7.3	SE	19 Nov 03	last paragraph: has a font change, ambigious: is this a footnote or should it be a bullet? Changed font to match rest of paragraph
table 4-3, 4.5, 4.6	SE	19 Nov 03	added "repeating headings" for the table
Table 4.5	SE	19 Nov 03	column: Data/Functional Type has acronyms not defined in acronym appendix. Added TBRs to SPDL, MICD, EICD
Table 4.5	SE	19 Nov 03	Changed NSPARS to NSPARs
Table 4.5	SE	19 Nov 03	NSPARS: last column: "Section XX", added TBD
Table 4.6	SE	19 Nov	added "repeating headings" for the table

Change Log

Section	Chng by	Date	Change
		03	
Table 4.6	SE	19 Nov 03	Added TBDs to several items in columns 3, 5, and 6
TOC	SE	19 Nov 03	Generated new TOC
3.4.1	SE	21 Nov 03	Corrected font case of paragraph
Appendix D	SE	03 Dec 03	**MIRI Engineering/Change Request Process Flow Diagram** Changed to landscape
Appendix E	SE	03 Dec 03	**MIRI Waiver B Process Flow Diagram** Changed to landscape
Cover Page	SE	04 Dec 03	Made corrections to cover page
ALL	SE	16 Mar 04	1. global change “Repository Engineer (RA)” to Information Management Engineer (IME) 2. global change “Information System Engineer (ISE)” to “Information Management Engineer (IME)” 3. global change “(RA)” to “(IME)” 4.global change “(ISE)” to “(IME)”
1.0	SE	17 Mar 04	Replaced section content with text from PIP D-25630
1.2.1	SE	17 Mar 04	1. copied the generic groups from template. 2. re-formatted the Project specific groups to match the generic groups 3. added Project specific documents to list
2 all	SE	17 Mar	Replaced section 2 from template

Change Log

Section	Chng by	Date	Change
		04	
4.3.x	SE	17 Mar 04	Replaced section 4.3.x from template
4.5	SE	17 Mar 04	1. added TBD to section title 2. removed items a.-d
4.5.2	SE	17 Mar 04	changed TBS to TBD
4.6	SE	17 Mar 04	1. Added "*(Collaborative Work area)" to section title* 2. *replaced bulleted item with same from template*
4.6.3	SE	17 Mar 04	Updated paragraph with indicative information

TB #	Section	Summary	Actionee	Action Taken

TBD/TBR/TBS Log

TB #	Section	Summary	Actionee	Action Taken
1	Appendix G	IM/CM Flight Projects Practices Compliance Matrix TBR by Project IME and CME		
2	Table 4-1	Management TBR		
3	Appendix D	MIRI Engineering/Change Request Process Flow Diagram TBR by Project CME		
4	Appendix E	MIRI Waiver B Process Flow Diagram TBR by Project CME		
5	1.2.1	Applicable Documents List TBR by Project Mgmt,IME, CME and Section 319		
6	2.1	Information Management Engineer TBR		
7	Figure 4-1	Figure 4-1 MIRI IT System Architecture TBD		
8	4.3.1	Multiple Access TBR		
9	Table 4.5.	(TBR by Project Mgmt,IME & CME)		
10	4.3.2	JPL Discreet TBR		
11	4.5	MIRI Project Portal (Internal Website) a. Communication resources (access control varies, default ACLs denoted) TBR by project management c. Project Planning and Engineering resources (direct links to PIM Systems) (where ever possible, source electronic repositories manage access control) TBR		
12	4.3.3	JPL Third Party Confidential Default Permissions TBR		
13	4.4.2	Public (External) Website Electronic Repository TBS		
14	4.7.10	Controlled Documents, Drawings, and Records Electronic Primary Repositories		

TBD/TBR/TBS Log

TB #	Section	Summary	Actionee	Action Taken
15	4.7.11	Controlled Documents, Drawings, and Records Electronic Secondary Repositories (TBR by Project Mgmt,IME & CME)		
16	4.7.3	Controlled Documents (TBR by Section 319, terminology and functionality needs to be reviewed against DM repositories)		
17	4.7.3	Controlled Documents TBR by Section 319, terminology and functionality needs to be reviewed against DM repositories		
18	4.7.4.1	Document Identification Project Numbers: (TBR by Section 319, terminology and functionality needs to be reviewed against DM repositories)		
19	1.1	added TBS to acronym table for definition of “EC”		
20	4.4.1	last bullet: "released information in PDMS" is not complete since there are released documents in Docushare TBR		
21	4.7.1	MIRI Project Document List, XXX-XXX-XXX TBR		
22	table 4-5	added TBRs to SPDL, MICD, EICD		
23	table 4-5	NSPARS: last column: "Section XX" TBD		
24	table 4-6	Added several TBDs to columns 3, 5, and 6		
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1.0 Introduction

The MIRI Document and Records Management (D&RM) Plan (JPL D-25634) will describe the project information that will be created, collected, and captured and how the information will be managed. In addition, this plan will identify the roles, responsibilities, and policies affecting the creation, use, management, and dissemination of Project information. For detailed information on the requirements being met, see the Project Control Systems Section of the Product Data Management Plan (JPL D-25635).

1.1 Purpose and Scope

This plan is applicable to the management of all project and product information and data that is generated and used for programmatic and technical purposes. It does not apply to science data resulting from investigations nor engineering data that is generated, collected, and managed by the Ground Data System. Contractors/vendors, Partners and Universities collaborating or performing directly with JPL in the development of the product shall implement a configuration management process subject to JPL approval (see Section 9.0).

The MIRI I&CMP is applicable from formulation (phases A and B) through implementation (phases C through E), where applicable. It addresses:

- The external and internal architectural components of the Project Information Management System (PIMS) that will be used to capture, store, maintain, and archive project technical and programmatic information
- Access and sharing of information within the project, the JPL community, with external project partners, while protecting restrictive information
- Tools and processes for supporting effective communication and collaboration between internal and external project members
- Procedures, policies, and processes for creating, managing, controlling, disseminating Category B, Level 2, 3 and 4 controllable documents, records and data associated with the project that are subject to IM and CM practices under the oversight of the project Information Management Engineer (IME) and Configuration Management Engineer (CME)
- User roles and responsibilities for managing, maintaining, and using the PIMS

Those MIRI documents under JPL CM control to be delivered to the MIRI EC/ESA partners, specifically requirements and subsystem specifications, will subsequently be included in their CM-controlled system. Any required changes following delivery of those documents will be first subjects to the requirements of this CM document for any revisions or changes. The EC/ESA will than add the resultant JPL revision or update to their document control system.

Those MIRI documents under JPL CM control to be delivered to the JWST Project will be maintained within their CM system. Any required changes subsequent to this delivery will be first subject to the requirements of this CM document for any revisions or changes. JWST will then process the resultant JPL revision or update through their system.

1.2 Applicable Documents

Documents referenced in this plan shall be applicable to the extent specified, and shall not be construed to be applicable in their entirety unless so indicated. Conflict between referenced documents and this document shall be referred to the Project Manager for resolution. Referenced JPL standards and procedures are resident within JPL Rules! (http://rules/). Numbers in brackets, e.g., <>, are the Rules

call number. Acronyms used in this plan are defined in Appendix A. Definitions of terms are provided in Appendix B.

1.2.1 Applicable Documents List

TBR by Project Mgmt, INFORMATION MANAGEMENT ENGINEER (IME), CME and Section 319

NPG 7120.5 NASA Program and Project Management Processes and Requirements

The following JPL Policies and Requirements shall be applicable:

JPL Rules Doc ID	
<42953>	JPL Information Technology Security for Computer Users (D-7223), Rev. 6
<36852>	JPL Information Technology Security Requirements for Computer Systems (D-7155), Rev. 5
<58032>	Flight Project Practices, Rev. 5
<57034>	Document and Data Control, Rev. 0
<57653 >	Software Development (D-23713), Rev. 4
Same id	Releasing Information Outside of JPL, Rev. 2

The following JPL Procedures shall be applicable:

<54393>	Configuration Identification of Project Elements, Rev. 0
<54394>	Configuration/Change Management of Project Elements, Rev. 0
<54395>	Configuration Status Accounting for Project Elements
<54396>	Configuration Verification and Auditing of Project Elements, Rev. 0
<36733>	Document Release System (EP500550), Rev. D
<36735>	Change Document Listing (ECR, ECI) (EP505805), Rev. C
<15032>	Category A Waiver Request/Approval, Rev. 2
<53052>	Category B Waiver Request/Approval, Rev. 1
<38374>	Product Data Management System (PDMS) Institutional Repository, Rev. 1
<32712>	Institutional Procedure for Redlining Documents, Rev. 3
<34052>	Use of Engineering Pre-Release and Redlined Drawings for Fabrication, Rev. 2
<36472>	Releasing Information for External Distribution, Rev. 3

The following JPL Standards shall be applicable:

<35596>	Engineering Drawing Practices (JPL-STD-00001), Rev. G
<35053>	Eng. Std. Prep. of Hardware Specifications (D-4410) (JPL-STD-00002), Rev. B
<35192>	Numbering of Engineering Documents, JPL STD00003
<36732>	Change Procedures Manual for Engineering Documents, JPL STD00008(discarded??) TBR
<35506>	Anomaly Resolution (D-8091), Rev. 3

The following additional JPL Category A documents shall be applicable:

<54873>	Configuration Management Engineer (CME), Rev. 1
<58373>	Mission Assurance Principles, Rev. 0
<36798>	Detail Mechanical Part and Assembly Serialization (QAP 61.4), Rev. 0
<35524>	Hardware Review and Certification Record (HRCR) (QAP 131.1), Rev. D
<35604>	Use of Parts Acceptance Tag (JPL Form 3646), Rev. E
<62192>	Software Review and Certification Record (QAP 131.3), Rev. 0
<62034>	Support Equipment Certification Record (QAP 131.2), Rev. 0

The following Project Documents (Category B) shall be applicable:
(Suggested list, **TBR** *by Project Mgmt,IME, CME)*

XXX-XXX-XXXX	**DEWAR Requirements Specification (DRS) JOL D-25641**
XXX-XXX-XXXX	**Mid-Infrared Instrument (MIRI) Science Requirements JPL D-24157**
XXX-XXX-XXXX	**MIRI Calibration Plan (CP) JPL D-25634**
XXX-XXX-XXXX	**MIRI Contamination Control Plan (CCP) JPL D-25645**
XXX-XXX-XXXX	**MIRI Detector Requirements Document (DRD) JPL D-24161**
XXX-XXX-XXXX	**MIRI DEWAR Control Electronics Requirements Specification (DCERS) JPL D-25643**
XXX-XXX-XXXX	**MIRI DEWER Subsystem Specification (DSS) JPL D-25647**
XXX-XXX-XXXX	**MIRI Focal Plane Electronics Requirements Specification (FPE) JPL D-25642**
XXX-XXX-XXXX	**MIRI Focal Plane Module Requirements Document (FPMRS) JPL D- 25644**
XXX-XXX-XXXX	**MIRI Functional Requirements Document (FRD) JPL D-24158**
XXX-XXX-XXXX	**MIRI Information Management/Configuration Management Plan (IMCMP) JPL D-25633**
XXX-XXX-XXXX	**MIRI Material Usages List JPL D-25640 TBR**
XXX-XXX-XXXX	**MIRI Mission Assurance Plan (MAP) JPL D-25631**
XXX-XXX-XXXX	**MIRI Operations Concept Document (OCD) JPL D-25632**
XXX-XXX-XXXX	**MIRI Product Data Management Plan (PDMP) JPL D-25635**
XXX-XXX-XXXX	**MIRI Project Data Management Plan JPKL D-25636**
XXX-XXX-XXXX	**MIRI Project Data Management Plan JPL D-25636**
XXX-XXX-XXXX	**MIRI Project Implementation Plan (PIP) JPL D-25630**
XXX-XXX-XXXX	**MIRI Reviews Plan (RP) JPL D-25637**
XXX-XXX-XXXX	**MIRI Risk Management Plan (RMP) JPL D-25638**
XXX-XXX-XXXX	**MIRI Software Management Plan (SMP) JPL D-25716**
XXX-XXX-XXXX	**MIRI Software Requirements Document (SwRD) JPL D-24160**
XXX-XXX-XXXX	**MIRI System Requirements Document (SysRD) JPL D25646**

2.0 Organization- Roles and Responsibilities
TBR by Section 319

IM and CM shall be organized with defined responsibilities to achieve the required IM and CM objectives.

2.1 Information Management Engineer TBR

The Information Management Engineer is responsible for:

- Co-Authoring the Information and Configuration Management Plan
- Designing the PIMS information architecture (structure, user processes, access control) ensuring that all access privileges comply with ITAR regulations, and JPL and other organizations requirements
- Developing and ensuring implementation of the Controlled Document and Records Management Process
- Developing communication and information processes associated with the information technology applications
- Interfacing with institutional services to provide disaster recovery and security policies that comply with the JPL Institutional Security Requirements
- Ensure that export control guidelines for electronic communications complying with JPL and ITAR /EAR regulations
- Review all Project contractor/partner IM Plan(s) before final approval to ensure they include all applicable schedules and details for accessing, retrieving, capturing, and transferring JPL official project information defined on the Master Document and Records List.

For additional responsibilities see specific functional components listed under Managing Information Section 4.0.

2.2 Configuration Management Engineer

The CME shall:

- Perform the functions appropriate to the project as defined in the CME Role Statement <54873>
- Work with Project Management, Engineering, Mission Assurance, Quality Assurance and Project Element Managers to ensure the processes necessary to implement the configuration management activities described in this plan are followed
- Interface with all organizations performing Project activities to facilitate communications for the smooth transfer of products
- Be the focal point for processing of ECRs and waivers
- Provide for CCB administration including ECR processing, coordination of impact assessments and follow up activities, recording of minutes and action items
- Record and report current change request status
- Act as the Project point-of-contact with the Product Data Management System (PDMS)
- Provide for document release and control through the PDMS
- Review and approve all Project contractor/partner CM Plan(s)
- Conduct CM compliance audit/peer review, as appropriate, to confirm compliance with CM requirements
- Record and report current waiver status

2.3 Project Manager

The Project Manager (PM) is responsible for:

- Chairing the Project Configuration Control Board (CCB) with authority to approve proposed Engineering/Budget Change Requests (ECR) and Waivers
- Approving release of documents defined on the Document Level Release Authority Table
- Provide PIMS guidelines for overall project team communication and information sharing practices

2.4 Project Scientist

The Project Scientist is responsible for:

- Co chairing the Project Configuration Control Board for science related changes
- Approving release of documents defined on the Document Level Release Authority Table

2.5 Mission System and Flight System Manager

The Mission and Flight System Managers or their designees are responsible for:

- Chairing their respective CCBs with the authority to approve proposed ECRs and Waivers
- Approving release of documents defined on the Document Level Release Authority Table

2.6 Mission System and Flight System Engineers

The Mission and Flight System Engineers is responsible for:

- Supporting the System CCB (see Section 6.2.2)
- Managing content of drawings and documents prior to formal release
- Intra-element interface and configuration control
- Approving release of documents defined on the Document Level Release Authority Table

2.7 Project System Engineer

The Project System Engineer (PSE) is responsible for:

- Supporting the Project CCB
- Recommending disposition of other ECRs and Category B waivers
- Supporting the generation and management of engineering requirements
- Preparation of interface, assembly and installation documentation
- Participation in or leading interface working group activities with elements
- Initiating, analyzing, and coordinating interfaces and configuration changes
- Approving release of documents defined on the Document Level Release Authority Table

2.8 Project Element Managers

The Project Element Managers (PEM) is responsible for:

- Chairing their respective Level 4 CCB (Class 3) (see Section 6.2.3)
- Reviewing and approving Class 2 changes (see Section 6.2.2)
- Recommending disposition of Class 1 changes and Category B waivers
- Approving release of documents defined on the Document Level Release Authority Table

2.9 Cognizant Engineer

The Cognizant Engineer (CE) is responsible for:

- Reviewing and approving proposed changes and Category B waivers, as appropriate
- Managing the content of drawings and documents prior to formal release
- Approving the release of drawings and documents

2.10 Mission Assurance Manager

The Mission Assurance Manager (MAM) is responsible for:

- Providing impacts and risk assessments for Class 1 and 2 ECRs, and Category B Waivers, as appropriate
- Coordinating MA discipline (Reliability, Parts, Environments, Materials and Processes) impacts and assessments for Class 1 and 2 ECRs, and Category B Waivers

2.11 Quality Assurance

Quality Assurance (QA) is responsible for:

- Monitoring hardware fabrication and software build processes to ensure that proper processes are used
- Ensuring that hardware and software traceability and non-conformances are documented, dispositioned and closed
- Ensuring that end-item data package requirements are satisfied (including as-built documentation. Detailed QA activities are described in the Mission Assurance Plan (MAP), XXX-XXX-XXXX, JPL D-XXXX.

2.12 Safety Engineer

The Safety Engineer is responsible for:

- Reviewing candidate configurations, proposed Class 1 and 2 engineering changes and Category B Waivers for safety impacts.

2.13 Software Manager

Software Manager is responsible for:

- Management of software documentation and media archives IAW the Project Software Management Plan (SMP), XXX-XXX-XXXX, JPL D-XXXX and the Flight Project Software Configuration Management Plan, XXX-XXX-XXXX, JPL D-XXXX.

2.14 Software Library/Repository Administrator

The software Library/Repository Administrator is responsible for:

- Operating the program library/repository
- Managing the baseline software, data and documents
- Entering documents, code, data files and other components of baselines in secure storage
- Issuing working copies to developers for authorized changes
- Keeping records and historical copies of all versions of the components of baselines
- Making copies of baselined software for testing and distribution
- Preparing version description documents

2.15 Engineering Data Management Group

The Engineering Data Management Group (EDMG) shall be responsible for:

- Releasing drawings and Engineering Change Instructions
- Retention of paper copies of closed Assembly and Inspection Data Sheets
- Maintaining as designed and as built information as required by the project

2.16 Other Project Personnel

Project personnel such as the Contract Technical Manager participate in the appropriate level CCB as described in Section 6.3.

3.0 Collaboration

All members of the MIRI Project team shall make every effort to fully and openly communicate with each other and supporting line, science, and partnering agencies and organizations personnel in order to solve complex scientific and technical issues inherent to innovative flight projects. It is important that every MIRI team member is responsible for identifying and, if required, elevating problems to increase the probability of mission success.

3.1 Meetings

MIRI Project team members will attend regularly scheduled programmatic and technical status meetings and working sessions at the Project, system, and subsystem levels. Additional meetings will be conducted as needed. Minutes generated from meetings at the Project level to subsystem elements are stored in the Project Uncontrolled Repository. Team members will also collaborate, using audio and video communications to teleconference and videoconference. Project members are responsible for interfacing with Office XXX to ensure that non-disclosure agreements are appropriately used for sharing technical information with external partners.

3.2 Reviews

Reviews will be held at the Project, System and Subsystem level, as described in the Project Review Plan (XXX-XXX-XXXX, JPL D-XXXX). Agendas should be distributed prior to the reviews via e-mail. Review Packages including End-Item Data Packages (EIDP) shall be submitted to the Information Management Engineer (IME) or CME for inclusion in the Project Primary Controlled Records Repository. Review Packages including End-Item Data Packages

3.2.1 Review Package

Review Packages shall be generated after MIRI Project reviews. The packages shall be stored in the Project Controlled Records Repository and include the following items:

- Presentation material
- Attendees list
- Review meeting minutes
- Actions and closures

3.2.2 End-Item Data Package

An End-Item Data Package shall be generated prior to the requirements certification review. There will be an EIDP for each assembly of flight equipment and each end-item assembly of deliverable support equipment. The EIDP shall contain the appropriate JPL data or contractor equivalents to establish the pedigree of the item for which it is assembled. See Section 7.2.1 for details.

3.3 Collaboration Among Internal Project Team

Communications among internal MIRI Project team members will be achieved through meetings; working sessions; sharing files in the Project Library, PDMS, and engineering databases; use of e-mail lists; and audio and video communications. The Work Area is structured to allow Project members to created shared folders where they can post, access, and collaborate on draft and work-in-progress materials. The Information Systems Engineer is responsible for establishing the Work Area default access controls to prevent unauthorized access to restricted information.

3.4 Collaboration with External Partners

Internal MIRI Project team members will communicate with external partners through the use of meetings (either at JPL or contractors' sites), teleconferences, videoconferences, shared files in the Project Library and PDMS, and e-mail, etc. The Project Library's primary repository is structured to securely accommodate external partners' information. Contractor proprietary and competition sensitive information (JPL Third Party Confidential) shall be clearly marked by the owner organization and will be assigned access permissions, in accordance to the owner organization's requirements to prevent unauthorized access, see Section 4.3.

3.4.1 Collaboration with Foreign Nationals

Project will follow guidelines from the international affairs office of JPL.

4.0 Project Information Functional Components

The primary purposes of the PIMS is to capture and deliver MIRI Project programmatic and technical product information to project members and other approved users and to ensure continuous flow of information through data and project lifecycles, while complying with governing information management requirements policies and requirements set by NASA, JPL, Caltech, and the MIRI Project throughout all phases of the project.

Managing and controlling Project information is accomplished by using a hybrid system composed of the following functional components: Public (External) Website, Project (Internal) Information Portal/Website, Primary Repositories containing Work in Progress information, Controlled Documents, Drawings and Records, Secondary Repositories containing Controlled and Uncontrolled Records, and a Physical Repository containing Controlled Documents and Records.

4.1 General Requirements

The following are information management general requirements:

- During the lifetime of the Project, all relevant Project official documentation shall be captured and made available electronically through the Project Information Management System.
- Every repository shall have a named custodian with defined responsibilities
- Documents shall be maintained in a secure environment equipped with appropriate access controls, disaster recover, and archiving capability
- Procedures shall be established and maintained for the review, approval, and revision of documents prior to issue. Approval authority for Level 1 through 4 documents is specified in Section 4.7.4.2 of this plan
- A MIRI Project Master Controlled Document List (MCDL) shall be established and maintained for those Controlled Documents that the repository controls
- A MIRI Project Master Controlled Record List (MCRL) shall be established and maintained for those Controlled Records that the repository controls
- Current issues of appropriate documents shall be accessible from all locations where operations essential to the effective functioning of a project or support activity are performed
- All Export Controlled information will be handled in accordance with U.S. regulations, International Traffic in Arms Regulations (ITAR), and Export Administration Regulations (EAR), and applicable JPL policies
- Non-JPL Proprietary information will be identified and access permissions defined by the responsible partner organization in order to protect both the interests of the partner, JPL and Caltech
- JPL Institutionally restricted (discreet) information will be handled in accordance with JPL Institutional policies
- Documented procedures shall be established and maintained for promptly identifying and removing invalid and/or obsolete documents from points of issue and places of use, as well as for transferring documents to inactive storage after specified retention times

4.2 Project Information Management System Architecture

The MIRI PIMS is comprised of several electronic and physical system information repositories, which are used to collect, store, manage, distribute, and archive project information electronic and physical file formats. The overall architecture will allow for the Project to collaborate and share applications and data with authorized personnel from within JPL and from other partnering agencies and organizations within a secure environment. The information architecture and infrastructure will provide the appropriate security mechanisms—user authentication, encryption, password protection, and individual user and object access control—that adhere to JPL and other principal organizations' policies and requirements.

Additionally, the information architecture is designed to support and facilitate access control, information and communication flows and applicable processes for controlling and managing project information. The MIRI Information Management architecture is described in Figure 4-1**.**

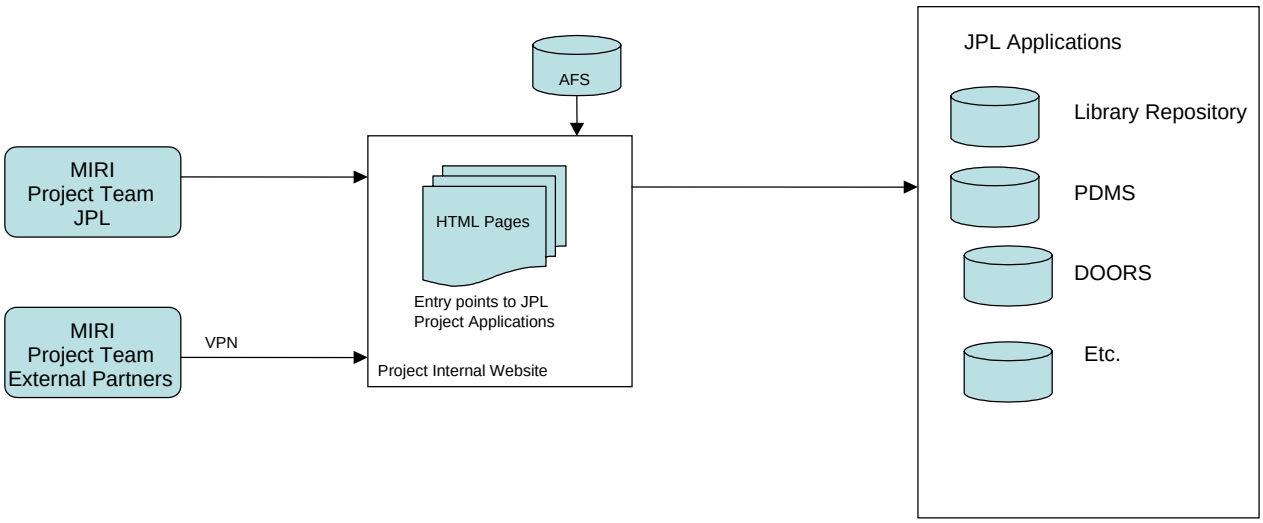


Figure 4-1 MIRI IT System Architecture TBD

4.3 Access Control

The architecture and methodologies that each information system component uses to capture, manage, distribute, and archive project information is based on information access class category (i.e., financial, discreet, proprietary, ITAR/EAR, etc.) access permissions category (i.e., role-based, user-based, project-based, organization-based, open-access), in accordance to data and project lifecycle phases.

The PIMS is closed to access; all users must login using a username and password assigned by the MIRI Project Information Management Engineer (IME). The Information Systems Engineer is responsible for the design of the primary library directory structure and access control policies and procedures in accordance with JPL Institutional, NASA, ITAR/EAR, and applicable partner organizations' policies and requirements, and the Project Manager's guidelines for the MIRI Project team's communication and sharing of information. Access Control (i.e., read, write, or change file permissions) is then pre-assigned and maintained by theIME and MIRI Project Information Management Engineer (IME). PIMS users needing to modify default file permissions must first consult theIME or MIRI

Project Information Management Engineer (IME). Default file permissions in the MIRI Project Primary Repositories are in accordance to the following information sensitivity classes: (Default permissions must be reviewed by MIRI Mgmt.)

4.3.1 Need to Know (general inclusion-based model)

NOTE: 4.3.1 through 4.3.4 to be edited by Stan, information not available at this time

Contains programmatic and technical information not included under the JPL Discreet, JPL Third Party Confidential, or Export Control classes. May include data owned by JPL-<PROJECT>, JPL other projects and line organizations, and external organizations. US external partners may have limited access, as defined by project management

Default Permissions TBR by Project

- Information Management Engineer: read/write/manage (limited maintainer)
- <PROJECT> JPL: read/write
- Other project defined <PROJECT> US groups: read/write
- Other JPL: read/write or defined by project management

4.3.2 JPL Discreet (exclusion-based model)

Includes JPL project owned sensitive information: financial, workforce, contract, intellectual property

Default Permissions TBR by Project

- Information Management Engineer: read/write/manage (limited maintainer)
- File Owner: read/write
- <PROJECT> JPL Management: read/write (role-based group)
- Other defined JPL/Caltech groups: read/write
- (Note: Project PM must identify any partner (non-JPL) management personnel)

4.3.3 Export Control (exclusion-based model)

Includes Non-ITAR/EAR and ITAR/EAR cleared files

Project ETR(s) reviews files' contents and authorizes access to Foreign National agencies or individuals only in accordance with the export control review and clearance process established by Legislature and International Affairs Office (LIAO)

Project LIAO rep is responsible for Export Transfer Representative (ETR) training and export process details. Other information access categories may additionally apply to the cleared files.

Default Permissions: TBR by Project

- Information Management Engineer: read/write (limited maintainer)
- Foreign National Agency: read/write
- <PROJECT> ETR (s): read/write
- <PROJECT> JPL: read/write
- Other defined <PROJECT> US groups: read/write

4.3.4 JPL Third Party Confidential (exclusion-based model)

Includes Non-JPL proprietary and Non-JPL competition sensitive information. Files will not appear on the project MCDL, MCRL, or sent to Vellum Files. The Owner Organization is responsible for identifying and marking files using their marking language

Default Permissions TBR by Project

- Information Management Engineer: read/write/manage
- File Owner: read/write
- Users from Owner Organization: read/write

<PROJECT> JPL: read

EDITOR'S NOTE: Stan's notes from meeting with Alix says to add "Table 4.6" from template here. This table is in section 4.7.12 of this document as well as in the template. Table was not added due to ambiguity. .

4.4 Public (External) Website

The MIRI Project Public Website provides the general public general mission information, mission objectives, and JPL's/NASA's science and technology goals and implementations, as well as a means to support education and outreach activities. Access is open to the general public with no restrictions.

4.4.1 Information Control and Operation Details

Information available on the public website is cleared for public access by the JPL Document Review Group in accordance with Export Administration Regulations (EAR) and International Traffic in Arms Regulations (ITAR).

- It is the document author or custodian's responsibility to obtain authorization for public release of JPL created Project information IAW Releasing Public Information for External Distribution <36472>, if it is required.
- If public release is required, the author shall contact JPL Document Review Services, which is responsible for ensuring that scientific and technical information is released in compliance with JPL/NASA/Caltech regulations.
- Releasing non-JPL information requires approval by the creating contractor/partner/university organization.
- Authorization is not needed for distributing JPL documents to other NASA centers, government agencies, contractors and subcontractors.
- If the information is cleared for release the custodian shall send the signed clearance form to the MIRI Project Information Management Engineer (IME). The signed form will be scanned and attached to the released information in PDMS. TBR In addition, a notice will be added about the clearance status to the document cover page, e.g., This document was approved by JPL Document Review Services for limited external release on 00/00/00, Clearance Number: XXXXX.

4.4.2 Public (External) Website Electronic Repository

TBS

4.5 MIRI Project Portal (Internal Website) TBD

The MIRI Project Portal is the primary point of entry to all JPL and partner organizations' hosted PIMS electronic components. Additionally, it provides easy access to project-general information, project-specific frequently accessed information, and other laboratory information resources. The Portal is accessible to Project JPL personnel, approved non-Project JPL personnel, and approved Project external partners. The site is not accessible to the general public. Where possible, access control is managed by the responsible PIMS application.

4.5.1 Information Control and Operation Details

The MIRI Project Information Systems Engineer is responsible for the design and content development of the Project Website. There is no formal change control process; however, content and access control modifications, if not managed by a PIMS application, must be done though the direction of the MIRI Project Information Systems Engineer and/or Project Information Management Engineer (IME).

4.5.2 Project Portal (Internal Website) Electronic Repository

TBD

4.6 Uncontrolled Work Area (Collaborative Work area)

The Project Work Area contains draft and work-in-progress information. The vast majority of the Project's programmatic and technical information developed throughout the project's lifecycle will be stored in this repository. Documents and records stored in this repository have not been released, therefore, are not under configuration control; documents shall not be used for official use.

- ***Draft***: draft implies the product represents a credible effort, but is not complete, and may not represent a Project consensus. The document may be released for informal review by the author but has not yet been formally reviewed and approved for release or been submitted to the Controlled Document Management Process. Therefore, the document is not identified as an Official Document, is not under control, does not include signatures and is not formally revised. Draft documents remain in the Uncontrolled Work Area Repository and are not included on the MCDL.

EDITOR'S NOTE: mtg notes indicate to add sample table from MER here, ambigious not added

4.6.1 Information Control and Operation Details

The Work Area comprises a hierarchical folder structure and uses embedded access controls as described in Section 4.3. The Project IME is responsible for designing the top default 2 to 3 levels of the browsable folder structure. The folder structure maps to the project's WBS, which is based on the project's cost distribution. However, it is best defined as *hybrid* programmatic and technical functional element-based hierarchical structure, as every attempt has been made for it to reflect the project team's natural communication and information flows. Project team members are encouraged to expand the default structure, while following the guidelines set by the ProjectIME. Refer to Table 4-1 for control and operations responsibilities.

Responsibility	**Management TBR**
Ensuring that folder/file default access controls are either maintained or that the Information System Manager is consulted before a change is made. Should this be "information management Manager?	Project Defined Custodians
Ongoing content and organization maintenance of hierarchical folder structure	Project Defined Custodians
Obtaining signatures and transferring released documents to file deposit area	Document Authors
Account creation and maintenance	Project IME
Modifying default access control permissions	Project IME
Monitoring access control permissions	Project IME

Table 4-1 – Project Primary Uncontrolled Repository Control and Operations Responsibilities

4.6.2 Uncontrolled Work Area Primary Electronic Repository

(TBS by Project IME- EXAMPLE ONLY)

The primary Repository for uncontrolled work is stored on a DocuShare System. The DocuShare tool is hosted as a sub-library on an institutional EIS platform, "Partners-lib", which adheres to the information technology security and system backup and protection requirements that are specified in "JPL Server Information Technology Security Requirements", D-7223.

4.6.3 Uncontrolled Work Area Secondary Electronic Repository

(TBS by Project IME - EXAMPLE ONLY)

Project Email Archives is hosted on an institutional server supported by Section XYZ, which adheres to the information technology security and system backup and protection requirements that are specified in "JPL Server Information Technology Security Requirements", D-7223. The MIRI Project Office manages the records management process.

4.7 Project Official Information

Project Official Information includes documents, engineering drawings and records that have been reviewed, approved, and authorized for release in accordance with the Document and Data Control Requirement <57034> and this Plan. Official documents accurately describe the functional, performance or physical characteristics of a product, including plans, sets of requirements, design, procedures. Project members act on the contents of Official documents, which are those documents in preliminary and final (initial and revised versions) configuration controlled states. Official engineering drawings disclose the physical or functional requirements of an item by means of graphic or textual presentations, or a combination of both. Official records indicate that an event has occurred or an activity has been completed and may be in response to a requirement, typically specified in a procedure or plan. All Project Official Information shall be stored, accessed, and retrieved from a PIMS repository as defined in this Plan. In addition, Project Official Information shall be identified in the Project Document List and the Document and Record Management Processes by-products defined in this Plan.

4.7.1 MIRI Project Document List

The MIRI Project System Engineer shall maintain the MIRI Project Document List, XXX-XXX-XXX. TBD This single document serves as a definitive list of all Official released and unreleased Project-generated Category B documents in their current document lifecycle states. The PDL is used to track document status and to ensure documents are released as scheduled during the project lifecycle. Documents are identified with Project numbers, JPL document numbers, document level numbers, titles, descriptions, current status and next scheduled release, custodian, and approval authority, and can be accessed from the primary controlled repositories by the project team.

4.7.2 Project Record List

The Project Information Management Engineer (IME) shall maintain a Master Record List that includes all official Project Records stored in the Project Primary Repositories. This single document serves as a definitive list of official Project-generated records in their current released or unreleased state, and is used to track their status during the project lifecycle. Documents are identified with Project numbers, titles, descriptions, current status and next scheduled release, custodian, and approval authority, if applicable, and can be accessed from the primary controlled repositories by the project team. Additional Project Record Lists may be maintained for Records stored in the Project Secondary Record Repositories.

4.7.3 Controlled Documents

Controlled Documents impose requirements and procedures on supporting and interfacing activities of Project elements, or contain information considered binding to MIRI Project activities. Controlled Documents have been reviewed, approved, and authorized for release, in accordance with the Controlled Document Management Process (see Section 4.7.4) and the Document and Data Control Requirement <57034>. There are two states of release, in which documents are subject to revision/change control procedures: (TBR by Section 319, terminology and functionality needs to be reviewed against DM repositories)

- ***Preliminary:*** A document is reviewed and formally approved for use by the project, and is formally released in accordance with the Controlled Document Management Process. Its contents may be incomplete, contain *To Be Determined* (TBD), *To Be Reviewed* (TBR) or *To Be Supplied* (TBS)

designations, have partial signatures on the signature page but may not be revised. The term *Preliminary* shall be denoted on the cover page and may be included in the page header. Team members may act on the contents of a preliminary document.

- ***Final:*** *(initial release or revisions)*: a document is reviewed and formally approved for use by the project, and is formally released in accordance with the Controlled Document Management Process. It's content shall be complete with no outstanding TBDs, TBRs, or TBSs for that current phase of the project, and it shall have full signatures on the signature page. Document revisions will be denoted by letters or numbers. The term *Initial* is implied if it is not included on the cover page and page header. Team members shall act on the contents of a final document. (Authors may denote a document baseline in the change log.)

Controlled Documents shall be identified with JPL document numbers, Project numbers, titles, cover dates, authorized signatures, and revisions, if applicable. All released documents, in their current controlled/revision state shall be included on the Master Control Document List.

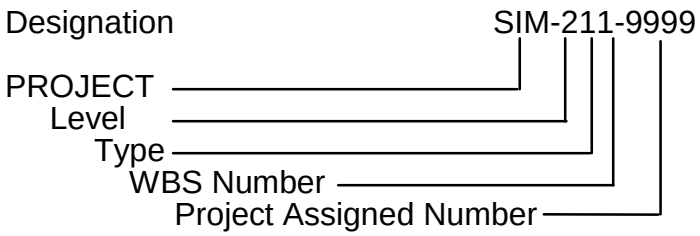
4.7.4 Controlled Documents Management Process and By-Products

The Controlled Document Management Process (see Appendix B-TBS by ProjectIME) is used to promote the Project's official documentation through the unreleased to the released lifecycle; released states include preliminary and final (initial release and revisions). Process components include an official project document template, procedures for submitting and releasing Official documents, and details on degree of corrections, if any, allowed without requiring the document to be resubmitted to the process. Controlled documents shall be identified with Project numbers, JPL document numbers, titles, cover dates, and revision indicators.

4.7.4.1 Document Identification

Project documents are identified by Project document numbers (see Table 4-2) and JPL D numbers.

- ***JPL D-Numbers****:* JPL D-Numbers are obtained from JPL Vellum Files. D-Numbers provide a redundant, institutionally sanctioned mechanism for publishing and storing documents. All controlled documents will carry a D-number.
- ***Project Numbers****:* MIRI Project document numbers use the format indicated in Table 4.2. Pre-release versions may be controlled by date or other means. Initial release shall be null revision, i.e., marked with no revision indicator ("-" in PDMS). Subsequent revisions shall be marked sequentially with alpha characters, e.g., A, B, C. Initial and subsequent revisions requirements documents (modules) tracked in the Dynamic Object Oriented Requirements System (DOORS) tool shall be marked sequentially with numerical characters, e.g. 1.0, 2.0, 3.0. (TBR by Section 319, terminology and functionality needs to be reviewed against DM repositories)



Document Level Number	Document Type Number
• 1 – Program/HQ Interface	• 1 – Plan
• 2 – Project Level	• 2 – Requirements
• 3 – Systems	• 3 – Interface Control Document (ICD)
• 4 – Subsystems	• 4 – Interface Agreement
• 5 – Box/Team/Assembly	• 5 – Procedure
	• 6 – Report
	• 7 – Specification
	• 8 – Misc. Document

Project WBS Number	Project Assigned Number (by DMS)
▪ 1 - Project Management	▪ 1-9999
▪ 2 - Project Engineering & Mission Design	▪ 1-9999
▪ 3 - Mission Assurance	▪ 1-9999
▪ 4 - Science	▪ 1-9999
▪ 5 - Payload System	▪ 1-9999
▪ 6 - Spacecraft Flight System	▪ 1-9999
▪ 7 - Mission Operations	▪ 1-9999
▪ 8 - Launch Services	▪ 1-9999

Table 4-2 – Project Number Example and Identification Components

4.7.4.2 Document Level Release Authority

Document approval blocks are signed in accordance with applicable project requirements supplemented with line organization requirements when applicable. However, all approval blocks must be signed.

Document approval is completed when required signatures are obtained. Preliminary documents shall be reviewed and approved by project management. Document revisions require the same level of review and approval as was required for the initial document release, unless otherwise designated. Project documents shall be subject to Configuration Control, see Section 6.0.

The authority to release initial and final (including revisions) controlled documents shall be according to the documentation level as shown in Table 4-3. (TBD by Project Mgmt: Complete 2nd and 3rd columns, include all applicable positions in approval authority column)

Level	Responsibility	Approval Authority
One *Plans Requirements, Specifications*	Project Manager	Headquarters
Two (Science) *Plans Requirements, Specifications*	Project Scientist	Project Manager
Two (MA) *Plans Requirements, Specifications*	Mission Assurance Manager	Project Manager

Level	Responsibility	Approval Authority
Two (other) *Plans Requirements, Specifications*	Project System Engineer	Project Manager
Three *Plans Requirements, Specifications*	Project Element Manager	Project System Engineer
Four *Plans Requirements, Specifications* *ICDs between Flight System Elements* *Hardware-Software ICDs*	Subsystem Cognizant Engineer	Project Element Manager
Five *Plans Requirements, Specifications* *ICDs between Flight System Sub-Elements*	Assembly Cognizant Engineer	Subsystem Cognizant Engineer

Table 4-3 – Project Documentation Level Approval Authority

4.7.4.3 Master Controlled Document List

The Project Information Management Engineer (IME) shall maintain a Master Control Document List (MCDL), a Controlled Document Management process by-product identifying all released official project documents in a single document. It serves as the definitive list of all officially approved and released Project-generated Category B documents in their current change control state that are maintained in the Project Electronic and Physical Repositories. The MIRI Project MCDL is auto generated and is controlled and accessed from the Controlled Document Repository: TBS by ProjectIME (Note: if controlled documents are kept in more than one repository, identify if an MCDL is maintained for each repository or if there's one consolidated MCDL.)

4.7.4.4 Document Tree

The Project Information Management Engineer (IME) shall maintain a Document Tree, a Controlled Document Management process byproduct identifying the Project's Official Levels 2-5 documents in a, preferably, hierarchical graphical format. The document tree also illustrates the flow-down of documents through the various levels and relationships among documents.

4.7.5 Controlled Engineering Drawings

Engineering drawings disclose the physical or functional requirements of an item by means of graphic or textual presentations, or a combination of both. A drawing, when approved, becomes the official document specifying requirements for procurement, manufacture, testing, or inspection of items depicted. Preparation of drawings for all flight hardware shall meet Class B requirements IAW Engineering Drawing Practices, JPL STD-00001 <35596>.

Drawings for Non-flight hardware items such as support equipment or fixtures shall meet the Class C or higher requirements IAW Engineering Drawing Practices, JPL STD-00001 <35596>. Note: All features of support equipment or fixtures which interface or mate with flight hardware shall be as good at the interfacing features of the actual flight equipment.

4.7.6 Controlled Engineering Drawings Management Process and By-Products

Controlled Engineering Drawings shall be prepared, reviewed and approved IAW with the requirements of the JPL Engineering Drawing Standard, JPL STD 00001 <34052>, and managed within the JPL Product Management System.

4.7.6.1 Engineering Drawings/Models Identification

Engineering drawings shall be prepared and identified IAW the requirements of Engineering Drawing Practices, JPL STD-00001 <35596>. Engineering drawing numbers shall be obtained through the

Engineering Data Management Group (EDMG). CME should coordinate with Lead Designer to obtain and include a block of drawing numbers from EDMG.

Controlled engineering drawing pre-release versions shall be controlled by a series of "X" characters, e.g., X1, X2, X3 IAW the requirements of Use of Engineering Pre-Released and Redlined Drawings for Fabrication <34052>. Initial release shall be revision A. Subsequent revisions shall be marked sequentially with alpha characters, e.g., B, C.

Three-dimensional Computer Aided Design (CAD) models and their association with the 2-D drawing representations of the CAD model shall be available and maintained within the PDMS in native and neutral file formats.

4.7.6.2 Engineering Drawings Release Authority

Drawing/Models are released through the Engineering Data Management Group (EDMG) and IAW Document Release System, EP 500550 <36733>. Engineering Document Services (EDS), also known as Vellum Files microfilms and distributes the blue prints and maintains copies for backup and disaster storage.

4.7.6.3 Drawing/Hardware Lists

- ***Equipment*** List: Describes the top level Configuration Items (CI) deliverable to ATLO or industry partners for integration and test. The Equipment List is generated by Project System Engineering and is maintained in PDMS. Reference designators, drawing numbers, and titles identify Equipment List CIs.
- ***Indentured Parts List (IPL)***: Lists the CI level flight parts having indentured position with respect to subassemblies and assemblies. The IPL constitutes the as-designed configuration.
- ***Consolidated Indentured Parts List (CIPL)***: Identifies the as-built condition of each JPL designated flight hardware CI. The CIPL includes serial numbers, inspection data, waivers, and any other pertinent as-built input.
- ***IPL/CIPL Difference List***: Indicates the differences between the as-designed(IPL) and the as-built (CIPL) documentation.

4.7.6.4 Engineering Drawing Tree

A hierarchical drawing tree shall be prepared electronically and maintained through the services provided by the EDMG using the PDMS.

4.7.7 Controlled Records

Official records may be process by-products or indicators that an event has occurred or an activity has been completed and may be in response to a requirement, typically specified in a procedure or plan. Controlled Records have been reviewed, approved, and authorized for release, in accordance with the Controlled Records Management Process, and, if applicable, Document Level Release Authority and configuration management processes (e.g., ECRs, waivers, AIDS). Controlled Records are not changed, under revision control or otherwise updated after they are created. All released records maintained in the Project Primary Repository shall be included on the Master Control Record List. See Official Information Primary and Secondary Repositories for all event and activity records.

4.7.8 Controlled Records Management Process and By-Products

The Controlled Document Management Process is used to promote the Project's Official Records from an unreleased a released state. The Controlled Records Management Process is a term that comprises several processes that are managed by designated project and line personnel responsible for specific record types. Processes include Controlled Record Management Release, Engineering Change Release, Category A and B Waivers, etc. (see Appendix C, TBS by ProjectIME). See Official Information Primary and Secondary Repositories for all process by-products.

4.7.9 Controlled Documents, Drawings, and Records Control and Operation Details

For controlled Documents, Drawings, and Records control and operation responsibilities, see Table 4-4:

Responsibility	Management
Account creation and maintenance	Information Management Engineer (IME) (may include Project Office support
Interfacing with project users to ensure that documents and records correctly follow the Controlled Documents and Records Management Processes	Information Management Engineer (IME)
Quality control checkpoint in the Controlled Documents and Records Management Processes	Information Management Engineer (IME)
Modifying default access control permissions	ProjectIME
Monitoring access control permissions	ProjectIME and Information Management Engineer (IME)
Maintaining process by-products, including the PDL, MCDL, MCRL, and Document Tree	Information Management Engineer (IME)
Ongoing archiving and record retention assessment	ProjectIME and Information Management Engineer (IME)
Managing controlled documents at preliminary and final initial release states	Project IM
Releasing controlled documents at final revision release state	Project CME
Managing all documents and drawings configuration management processes after final revision release state	Project CME

Table 4-4 – Controlled Documents, Drawings, and Records Management

4.7.10 Controlled Documents, Drawings, and Records Electronic Primary Repositories

TBS by ProjectIME (Examples only)

DocuShare and PDMS are the two MIRI Project electronic primary repositories used to manage controlled documents, drawings and records:

- ***DocuShare***: The tool is hosted on an institutional EIS platform, which adheres to the information technology security and system backup and protection requirements that are specified in "JPL Server Information Technology Security Requirements", D-7223.
- ***PDMS***: The tool serves as an accounting application, facilitates review, approval, release and management of controlled documents and records, and is the repository for controlled documents and engineering data. Configuration management is achieved via PDMS business rules combined with an electronic vault, which ensures that only authorized persons create, change, and/or approve release of models, drawings, and related documentation. PDMS also functions as an archive facility for the Project. For PDMS tool details see Product Data Management System (PDMS) Institutional Repository, <38374>.

Controlled documents, drawings and records managed in the MIRI Project electronic primary repositories are listed in Table 4.5. (TBR by Project Mgmt,IME & CME)

Data/Functional Type	Repository	System Hosting Organization	Data Control Process	Process Management	Comments
Project Plans	PDMS	JPL, Section 319	Document Management	Project Office	
Policies	PDMS		Document Management	Project Office	
Procedures	PDMS DocuShare		Document Management	System Engineering	
Agreements	PDMS		Document Management	Project Office	
Engineering Drawings	PDMS	JPL, Section 319	Document Management	JPL, Section 319	
IPLs	PDMS	JPL, Section 319	Document Management	JPL, Section 319	
CIPLs	PDMS	JPL, Section 319	Document Management	JPL, Section 319	
SPDL TBR	DocuShare		Document Management	System Engineering	
MCDL - Documents	PDMS	JPL, Section319	Document Management	Project Information Management Engineer (IME)	
MCDL - Drawing	PDMS	JPL, Section319	Document Management	Project CME	
IICDs	PDMS		Document Management	System Engineering	
MICDs TBR	PDMS		Document Management	System Engineering	
EICDs TBR	PDMS		Document Management	System Engineering	
Specifications	PDMS		Document Management	System Engineering	

Data/Functional Type	Repository	System Hosting Organization	Data Control Process	Process Management	Comments
CDRLs	PDMS		Document Management	Project Office	CM Process, See Section 8.0
ECRs/ECIs	PDMS		Record Management	System Engineering	CM Process, See Section 6.0
NSPARs	PDMS		Record Management	Mission Assurance	CM Process, See Section XX TBD
Waivers	PDMS		Record Management	Mission Assurance	CM Process, See Section 6.0
Inspection Reports (IRs)	PDMS		Record Management	Quality Assurance	See QA Plan section of the MIRI MAP
Non CM process Controlled Records (Unless identified in secondary repository)	DocuShare	JPL, Section 366	Records Management	JPL, Section 319	

Table 4-5 – Electronic Primary Repositories

4.7.11 Controlled Documents, Drawings, and Records Electronic Secondary Repositories (TBR by Project Mgmt,IME & CME)

System hosting organizations, defined in Table 4.6, are responsible for complying with applicable information technology security and system backup and encryption and authentication protection requirements that are specified in the JPL Server Information Technology Security Requirements, D-7223 and JPL Information Technology Security Requirements for Computer Systems, D-7155.

Data/ Functional Type	**Repository**	**Hosting Organization**	**Data Control Process**	**Process Management**	**Comments**
Requirements (levels 2, 3, 4)	DOORS/ PDMS	JPL, Section 319	Document Management	System Engineering	CM Process, See Section XX TBD
Acquisition	TBS	JPL, Section XX TBD	Records Management	Acquisition Section XX TBD	Refer to Project Acquisition Plan (XXX-XX-XXXX) TBD
Schedules	TBS	JPL, Section XX TBD	Records Management	Project Scheduling, Section 256	
Financial	TBS	JPL, Section XX TBD	Records Management	TBS	
Action Items and RFAs	MIRI AITS	JPL, Section XXX TBD	Records Management	Project	
Mission and Quality Assurance Records	Physical and Electronic (PDMS)	JPL, Section 512	Records Management	Mission Assurance	AIDS, IRs, As Run Test Procedures. See the requirements for Quality Assurance Records in the MAP.

Data/ Functional Type	Repository	Hosting Organization	Data Control Process	Process Management	Comments
Anomalies	Unified Problem Reporting System	JPL, Section 319	Records Management	Mission Assurance	UPRS tracks status of Problem/Failure Reports (PFR) and implements IAW the requirements of PFR System, Anomaly Resolution JPL D-8091 <35506>, and the MIRI MAP.
Receivables / Deliverables	RecDel System				

Table 4-6 – Electronic Secondary Repositories

4.7.12 Project Physical Repository

A subset of Project information will not be available in electronic form and will be stored in a physical repository managed by the Information Management Engineer (IME). This repository will be accessible to any MIRI Project member by contacting the Information Management Engineer (IME) or Project Secretary (TBD by Project).

Copies of D-numbered project documentation shall be submitted to Vellum File for backup and disaster storage, providing a secondary means of storage, retrieval, and distribution of hardcopy documents. Examples of information maintained in the physical repository include:

- Materials generated in a non-(computer)-electronic form (e.g., vendor brochures, videos, photographs)
- Original signature pages for documents
- Original records created manually (e.g., test logs, redlines)
- Artifacts deemed valuable enough to keep (e.g., education/outreach materials)

Additional physical repositories may be maintained by Project and Line personnel, responsible for managing specific record processes, see Table 4.7.

Data/Functional Type	Hosting Organization	Data Control Process	Process Management	Comments
Hardware Review and Certification Record (HRCR)	JPL, Section 352	Records Management	Project	Defines the readiness status and signature authorization of deliverable flight hardware
Software Review and Certification Record (SRCR)	JPL, Section XX	Records Management	Project	Defines the readiness status and signature authorization of software deliveries
Support Equipment Review and Certification Record (SECR)	JPL, Section 352	Records Management	Project	Defines the readiness status and signature authorization of deliverable support equipment hardware

Assembly and Insp. Data Sheets (AIDS)	JPL, Section 512	Record Management	Quality Assurance	

Table 4-7 – Physical Repositories

4.8 Archiving and Records Retention

The MIRI Project will maintain its own information throughout the lifetime of the project, except where specifically noted otherwise. Documented procedures shall be established and maintained for promptly identifying and removing invalid and/or obsolete documents from points of issue and places of use, as well as for transferring documents to inactive storage after specified retention times. Obsolete documents retained for legal, contractual, and/or historical purposes shall be suitably identified.

Throughout its lifetime, the Project is responsible for capturing the information necessary to:
- Meet the information needs of MIRI Project operations
- Meet JPL/Caltech/NASA contractual, legal, and record retention requirements, and construct a project history

Since record retention requirements may extend beyond the lifetime of the MIRI Project, at the end of the MIRI Project, all hardcopy records, documents, artifacts of historical importance, and a set of CD-ROMs containing project library files will be transferred to the JPL Archives.

5.0 Configuration Identification

Configuration identification is the basis from which the configuration of products is defined and verified, and shall be accomplished IAW procedure Configuration Identification of Project Elements <54393>. Configuration Identification is comprised of:
- Selecting Configuration Items (CI) and Computer Software Configuration Items (CSCI)
- Determining product structure
- Allocating identification characters or numbers
- Documenting CI/CSCI performance, physical, and functional characteristics
- Establishing baselines.

5.1 Baseline Management

Baselines shall be established to document status of the product definition at key points in the product life cycle as depicted on the Project Master Schedule. (Use Project Life Cycle figure Appendix XX, TBS byIME.) Baselines serve as a point of departure to manage changes. Refer to the SMP for additional guidance regarding software baselines.

5.1.1 Requirements Baseline

An initial Requirements Baseline is established at the end of Phase A corresponding to the commitment to the preliminary Level 1,2 and 3 requirements. The Requirements Baseline shall be established prior to the Preliminary Design Review (PDR) (start of Phase C: Detailed Design and transition to Implementation) corresponding to the commitment to the final Level 1,2 and 3 requirements and preliminary Level 4 requirements. By PDR, all mission level and interface requirements are identified and subject to formal change control practices as described in Section 6.4.1 of this plan.

5.1.2 Design Baseline

Following the PDR(s), the requirements allocation or decomposition process continues and the product definition expands to include the detail design. The Design Baseline shall be established prior to the

Critical Design Review (CDR) (start of Phase D: Build and Test). The CDR is conducted to ensure that all the requirements have been identified, that the released detail design documentation will correctly implement the mission requirements, and to demonstrate the maturity of the design and readiness to build the flight product. Formal change control practices, addressed in Section 6.4.1, are implemented for detailed designs.

5.1.3 Product Baseline

The Product Baseline (as-built configuration) shall be established prior to ATLO, or shipment to the spacecraft contractor, as a result of certification reviews (refer to Section 6). Product baseline is maintained throughout the remainder of the program by formal change control. For each equipment list item the product baseline shall be established by the conduct and closure of the Review and Certification process defined in Section 6, and is defined by the End-Item Data Package (EIDP).

5.1.4 Operational Baseline

The operational baseline defines the as-launched condition and shall be maintained by formal change control.

5.2 Reference Designators

Reference designators shall be applied to hardware to identify parts to the lowest level. The reference designators are used to locate electrical and electronic parts, subassemblies, assemblies and subsystems within systems, enabling traceability to installation locations. Part numbers, serial numbers, and lot/date codes provide pedigree data enabling traceability to the manufacturers or other sources. Complete traceability is provided through PDMS. The list of parts and associated reference designators, maintained by PDMS is used as part of a hardware identification schema, shown below.

The example reference designator describes a Capacitor (C106) on a Printed Wiring Board (PWB2) in a Power Supply (PS02) in the Subsystem on the System for MIRI.

5.3 Hardware Serialization and Traceability

5.3.1 Hardware Product Serialization

Traceability shall be established for CIs and for any item that must be tracked individually. PMEL items, items that are individually tested, and items having a configuration document shall be serialized, except where the item is the continuation of an existing lot. Mechanical HW serialization shall be IAW Detailed Mechanical Part and Assembly Serialization, QAP 61.4, <36798>.

Quality Assurance personnel record traceability data on IRs and Assembly and Inspection Data Sheets (AIDS) IAW the appropriate Quality Assurance Procedures. The requirement for serialization, and the assigned number(s), shall be made a part of the serialized item's configuration identification. CM shall

ensure that each major hardware element of the deliverable product provided by JPL or JPL subcontractors is serialized to ensure traceability.

5.3.2 Hardware Product Lot/Date Coding

For traceability, Lot Numbers, Date Codes, and Trace Numbers shall be used. Item suppliers shall provide the Lot/Date Codes. The Part Acceptance Tag, JPL Form No. 3646, shall be used to record traceability and incoming inspection acceptance of bulk materials and/or non-serialized hardware, refer to Use of Parts Acceptance Tag, QAP 141.12, (JPL Form 3646) <35604>.

For electronic parts lot/date coding refer to MIRI Parts Program Plan, XXX-XXX-XXXX.

Trace Numbers are assigned to electronic parts by the Electronic Parts Information Systems Network (EPINS). Limited shelf-life items shall be identified and tracked (Find where tracked, TBS by Project CME) to ensure products that have exceeded their shelf life are not used in the product or in the manufacture of the product.

5.4 Software Identification/Version

Software development shall be IAW Software Development Requirements, JPL D-23713 <57653>, the Project SMP and subordinate plans. Software shall be classified by function. Media and documentation shall be identified as to the version of SW represented using SW CM tool release tags. The versions of software delivered shall be labeled to clearly identify the modules, components, and frameworks for both function and version. A Build Description Document (BDD) shall accompany each released version of software. Software documentation, including requirements, interface requirements, software detail design, build instructions, development environment, test requirements, user manuals and operating guides, shall each be uniquely identified.

6.0 Configuration Control

Configuration Control is the process of controlling changes to defined and established baselines; and shall be accomplished IAW CM procedure Configuration/Change Management of Project Elements <54394>. Configuration Control is accomplished through a systematic method of establishing levels of control, classifying changes and providing authoritative disposition of changes.

6.1 Configuration Control Process

Documents that impose requirements and procedures on supporting and interfacing activities of Project elements, and that contain information considered binding to MIRI Project activities shall be subject to revision/change control procedures. Prior to the existence of the product, configuration control applies only to the documentation defining the product. Once the product is developed, configuration control applies to both the product and its defining documentation, and must be applied to both concurrently.

6.2 Change Classifications

Changes shall be classified according to their program impact, defined below:

6.2.1 Class 1 Changes

Class 1 change shall be defined as any change that meets one or more of the following criteria:

- Impacts Project Systems
- Impacts Level 1 or 2 project requirements
- Impacts Level 1 or 2 schedule margins
- Estimated cost of proposed change is not within the system/subsystem budget and needs additional Project funding

- Impacts safety
- Impacts hardware interchangeability
- Interface changes

6.2.2 Class 2 Changes

A Class 2 change shall be defined as any change that meets the following criteria:

- Does not impact Class 1 criteria
- Estimated cost of the proposed change is within the system/subsystem budget and does not need additional Project funding
- Impacts Level 3 project requirements

6.2.3 Class 3 Changes

A Class 3 change shall be defined as changes to documents and drawings at Level 4 that do not impact interfaces.

6.3 Configuration Control Boards

The Project shall establish Configuration Control Board(s) (CCB) to review and disposition change recommendations. The CCB is responsible for discussion of proposed changes and for recommending to the CCB chair the disposition of the changes and waivers. The CCB is a working group consisting of representatives from the various disciplines and organizations of the project including science, engineering, and mission assurance. The CCB may approve, disapprove, or defer a change request; it may request more information and additional analysis. CCB decisions are management decisions that include the expenditure of resources, and the decisions must be made by the responsible manager.

The Project shall establish tiered CCBs to facilitate the review and disposition of change recommendations at the lowest reasonable level as delegated by the project manager. The CME is the secretariate for the CCB, schedules meetings, prepares and distributes agendas and meeting minutes, and records current status. This information is added to the tracking data base or recorded in files.

6.3.1 Project CCB

The Project CCB shall be responsible for Class 1 changes, Category A and B waivers, and for reconciling issues from Systems CCB. Membership includes:

- Chair - Project Manager
- Project Scientist
- Contract Technical Manager
- Project System Engineer
- Mission Assurance Manager
- CME (secretariat and administrator)
- Additional project personnel may participate, as required, to support change evaluation, e.g., SW Manager, Business Office, CEs, QAE, safety engineer, test engineers, mission operations, contract technical managers/contractors.

6.3.2 Subsystem CCB

The subsystem CCB shall be responsible for all changes not affecting the Project or System CCB and for documentation changes prior to formal release.
Membership includes:

- Chair – Project Element Manager/Cognizant Engineer
- Contract Technical Manager
- System Engineer(s)
- CME (secretariat and administrator)

- Additional project personnel may participate, as required, to support change evaluation, e.g., QAE, safety engineer, test engineers, mission operations, contract technical managers/contractors.

6.3.4 Software Review Board

A Software Review Board (SRB) shall be established to manage SW changes after unit testing IAW the SMP. It may be delegated the same level of change authority, for SW, as a Class 1 (Level 2) CCB at the concurrence of the PM and SW Development Manager.

6.4 Change Processing

Changes for flight, support equipment, and test environment hardware, software, associated documentation, budget, and/or schedule shall be processed using the change management system embedded in PDMS. The ECR flow diagram is shown in Appendix D. Changes shall be initiated, documented, reviewed and approved in PDMS. During SW development, integration and testing a separate change process and review board may be used to review changes to code or documentation not affecting baselined requirements. Refer to the SMP, and subordinate plans.

6.4.1 Engineering/Change Request

Engineering changes of released controlled documents, e.g., requirements documents, ICDs, drawings, procedures, and budget liens are processed using the Engineering/Budget Change Request (ECR) and are reported on a common form. ECRs are created and numbers assigned automatically when ECR metadata records are created and saved in the PDMS. The ECR form shall be prepared and attached to the change metadata along with appropriate supporting information, such as a description of the change in “was-is” language. For budget changes a Friendly Front End (FFE) shall be attached to the ECR. The MIRI Project ECR form is available in PDMS. The CCB reviews the ECR and associated impacts, then dispositions the change appropriately.

6.4.2 Engineering Change Instruction

An ECI shall be used to change an individual document when implementation must be expedited before incorporation. A released ECI has the same status as a revised document. Incorporation of outstanding ECIs should be accomplished and a new document revision released when document clarity is affected. Refer to Change Procedures Manual for Engineering Documents, JPL-STD00008 <36732>. Once created, the change description or depiction shall be attached to the record.
An ECI may be used for the following purposes:

- To describe the change in detail, and approve it, in advance of incorporation into the document
- To communicate the change information to the users of the document in an easy-to-understand form
- To describe the change in lieu of putting all details in the revised document change description block
- As a convenience whenever it is easier, faster, or cheaper than immediately revising the original document.

A maximum of six ECIs shall be made before all ECIs are incorporated in the next revision release of a drawing. An ECI Follow-up Engineer Report shall be prepared and attached to the PDMS ECI record to certify implementation/incorporation of the ECIs.

6.4.3 Use of Redlined Drawings and/or Procedures

In the process of fabrication, assembly or test operations, it may be necessary to redline a drawing and/or procedure. For drawings the System Procedure for Use of Engineering Pre-Released and Redlined Drawings for Fabrication, <34052> shall be implemented. The Institutional Procedure for Redlining Documents, <32712> shall be implemented for procedures. Fabrication and assembly

drawing redline changes shall be approved by ECI, or drawing revision release prior to Hardware Requirements Certification Record (HRCR). The redline change(s) shall be attached to the ECI record by suitable means, such as by scanning, to capture the change(s) made to the drawing. Test procedure changes shall be incorporated as determined by the appropriate System Manager.

6.4.4 Use of Unreleased Drawings for Fabrication

The process of fabricating to unreleased drawings is a necessary compromise involving risk resulting from situations when it is impracticable to prepare and release drawings prior to fabrication and still meet project schedule commitments. In such cases the System Procedure for Use of Engineering Pre-Released and Redlined Drawings for Fabrication, <34052> shall be implemented. Note that such practice entails both cost and schedule risk which must be addressed. Unreleased drawings shall be completed and released prior to final inspection of the article. At that point, no use of unreleased documentation will be allowed.

6.5 JPL Waiver Processes

A Waiver is a written authorization to accept an item which is found to depart from specified Institutional (Category A) or Project (Category B) requirements, but nevertheless is considered suitable for use “as is” or after repair by an approved method.

6.5.1 Category A Waivers

Category A Waivers (WVRA) shall be written against JPL Institutional requirements (level 1 - 3) and require Process Owner concurrence for implementation. WVRA numbers are generated automatically as the waiver metadata records are created and saved in PDMS. Refer to the Category A Waiver Request/Approval Procedure <15032>. The Project CME provides assistance in processing Category A Waivers.

6.5.2 Category B Waivers

Category B Waivers (WVRB) shall be written against project requirements (level 2 - 4) not affecting JPL Institutional requirements and shall be dispositioned by the appropriate class CCB. The Category B Waiver Process Flow is shown in Appendix E. WVRB numbers are generated automatically as the waiver metadata records are created and saved in PDMS. Refer to the Category B Waiver Request/Approval Procedure <53052>. Category B Waiver description:

7.0 Configuration Verification and Audit

Configuration Verification and Audit provides confirmation that the product, as defined by the configuration documents, conforms to Project performance, physical, and functional requirements. Configuration Verification and Audit involves a comparison of the equipment with the controlling documentation, on a sampling basis, and shall be accomplished IAW CM procedure Configuration Verification and Auditing of Project Elements < 54396>.

7.1 Verification and Audit Procedures

The following implement Configuration Verification and Audits:

- Formal technical reviews (PDR/CDR) shall be conducted to verify requirements implementation during design development.
- Quality Assurance in process and pre-acceptance inspections shall certify the as-built condition of the equipment.
- The Hardware Review Certification Record <35524> (HRCR) and associated review, which includes all identified hardware and associated documentation, shall be the vehicle for official acceptance of deliveries to ATLO or spacecraft contractor.

- The Support Equipment Review Certification Record (SECR) and associated review, which includes all identified support equipment and associated documentation, shall be the vehicle for official acceptance of deliveries to ATLO or spacecraft contractor.
- The Software Review Certification Record (SRCR) and associated review shall be the vehicle for official software deliveries.
- Pre-ship Review shall be the vehicle to report the status of the configuration prior to delivery.

The Launch Readiness Review shall be the vehicle to report the status of the configuration prior to launch.

7.2 Requirements Verification

7.2.1 End-Item Data Package

An End-Item Data Package (EIDP) shall be generated prior to the requirements certification review. There will be an EIDP for each assembly of flight equipment and each end-item assembly of deliverable support equipment. The EIDP shall contain the appropriate JPL data or contractor equivalents to establish the pedigree of the item for which it is assembled. See Section XX for details. The EIDP includes:

- Review/Certification Record form (for hardware, software or support equipment)
- Final Inspection Report
- Problem/Failure Report Summary (Open and closed)
- Open Engineering/Budget Change Requests Summary (including Engineering Change Instructions (ECI), as applicable)
- Test Results Summary (Hardware and Software)
- Engineering Waivers Summary (Hardware and Software)
- Consolidated Indentured Parts List (CIPL) (As-Built data)
- List and release status of As-Built drawings (and ECI status)
- Safety, handling, packaging, storing, and shipping requirements
- Test constraints
- Telemetry calibration data
- Material Review Board (MRB) actions
- Software code listing (when appropriate)
- Contamination Certification
- Configuration Assembly Log (including software)
- Verification and Validation Report

7.2.2 Hardware Review Certification Record

The HRCR shall be used to define the readiness status of deliverable hardware and to provide a vehicle for signatures attesting to that status by appropriate engineering and management personnel. The Project Office, the MAM and the CE(s) shall develop the technical and signature requirements for HRCR using JPL form 1023 as a basis.

During the product life cycle the assigned CE and hardware QAE shall maintain their respective HRCR data until completion of integration and testing. As defined in the PIP/MAP and program schedule the completed HRCR(s) shall be presented for review and signature. The completed HRCR shall become a permanent part of the project archives. A copy of the HRCR shall accompany the product at delivery. (Refer to QAP No. 131.1.)

7.2.3 Support Equipment (Review) Certification Record

The SECR shall be used to define the readiness status of ground support equipment and to provide a vehicle for signatures attesting to that status by responsible engineering and management personnel. The Project Office, the MAM and the CE(s) shall develop the technical and signature requirements of the SECR, using JPL form 2626 as a basis.

During the product life cycle the assigned CE and QAE shall maintain their respective SECR data until completion of integration and testing. As defined in the PIP/MAP and program schedule the completed SECR(s) shall be presented for review and signature. The completed SECR shall become a permanent part of the project archives. A copy of the SECR shall accompany the product at delivery (refer to Hardware Review and Certification Record, QAP No. 131.1).

7.2.4 Software Review Certification Record

The SRCR shall be used to define the readiness status of deliverable software and to provide a vehicle for signatures attesting to that status by responsible engineering and management personnel. The Project Office, the MAM and the SW CE(s) shall develop the technical signatures requirements for the SRCR, using JPL form 1925 as a basis.

A software product shall be in compliance with published design and coding standards so that it may be maintained, modified and upgraded. The following shall be verified:

- The documentation library control system
- Uniqueness of the product identifier
- Validity of interfaces
- Internal audit records of CM processes and procedures

During the product life cycle the assigned SW CE and SW QAE shall maintain their respective SRCR data until completion of integration and testing. As defined in the Project Implementation Plan (PIP), XXX-XXX-XXXX, MAP, SMP and program schedule the completed SRCR(s) shall be presented for review and signature. The completed SRCR shall become a permanent part of the project archives. A copy of the SRCR shall accompany the product at delivery.

7.3 Configuration Audits

Configuration Audits are an independent verification, performed on a sampling basis. The Project CME shall coordinate configuration audits during the relevant certification or pre-shipment review of each item or assembly deemed appropriate. System Engineering, QAE and other project elements shall support the audits.

Configuration verification of the integration and test of the spacecraft prior to delivery shall be accomplished at the Pre-Ship (or Delivery) Review.

7.3.1 Functional Configuration Audit (FCA)

The objective of the FCA shall be to verify that the actual performance of the product complies with its requirements. Test data shall be reviewed by the Cognizant Engineer and concurred by QA to verify that the item has performed as required by its configuration identification (specifications and/or drawings, etc.).

The intent of the FCA is satisfied with the HRCR and the SRCR for each equipment list item. All required hardware (HRCR) and software (SRCR) functional and performance tests shall be verified as having been accomplished; and that the results have met the functional and performance requirements.

7.3.2 Physical Configuration Audit (PCA)

The PCA shall be the formal examination of the as-built version of the product against its technical documentation. The PCA includes a detailed audit of engineering drawings, specifications, technical data and tests utilized. The review shall include an audit of the released engineering documentation and quality control records to make sure the as-built configuration is reflected by this documentation.

The intent of the PCA is satisfied with the HRCR and SECR for each flight and support equipment item. This is accomplished by verification that all inspections and dispositions have been completed indicating

the as-built condition, and that differences between as-designed and as-built have been reconciled. Verification that Computer Software Configuration Items (CSCI) has been built in accordance with the detail design and requirements specifications shall be accomplished with the SRCR.

7.3.3 Configuration Audit Reports

An audit report shall be prepared for each audit summarizing the article audited, documentation reviewed, findings and actions required to correct non-conformances. The audit report shall be attached to the relevant HRCR/SRCR/SECR.

7.4 Compliance Audit/Peer Review

A CM Compliance Audit, or Peer Review, shall be conducted as an independent review of the Project to assure conformance with CM requirements defined in this plan. The Subcontractor/Team Partners shall also be subject to compliance auditing.

8.0 Contractor/Partner/University Configuration Management

8.1 CM Program

JPL Contractors/vendors, Partners and Universities shall apply their own institutional Configuration Management programs to deliverable configuration items, and as authorized by the Project, may have access to the JPL PDMS and the PRS. Alternately resident data management systems may be interfaced with JPL systems. The intent is to save time and minimize errors caused by reentering data from one application to another.

The minimum configuration management requirements for Contractors/Partners/Universities shall be:

- To implement configuration identification;
  - To define product requirements, functional, performance, and physical, in appropriate documents and drawings;
  - To assign unique identifiers to product, documents and drawings;
  - To approve the product definition;
  - To maintain the status of the product definition.
- To establish change management;
  - That all documents and drawings, and therefore the product, are under change control;
  - That all requested changes are documented, including recommended solution and impact assessments;
  - That changes are approved or rejected by a board comprised of the person having the authority to commit for the entity and appropriate cognizant individuals representing Science, Engineering, and Mission Assurance;
  - That implementation of changes is verified in both documents/drawings and the product.
- To provide status accounting;
  - To provide status of all documents and drawings, including title, author, date, identification number and revision;
  - To provide parts listing and application (where used) data for drawings;
  - To record and report both as-designed and as-built information;
  - To record and report change and waiver status.
- To verify the product's functional, physical, and performance requirements;
  - That the product's functional, physical, and performance requirements are documented;
  - That the product's functional, physical, and performance requirements have been verified and documented;
  - That the difference, if any, between the documented requirements and verified requirements are reconciled.

To define the implementation of configuration management.

8.2 CM Plan

All required contractor CM Plans shall be reviewed and approved by the Project CME and shall:

- Define implementation of configuration management, including roles/responsibilities.
- Identify when the requirements are baselined, and when the detail design for hardware and software is considered baselined.
- Identify how CM requirements are flowed down and verified to subcontractors.
- Define the product identification schema for hardware, software and firmware.
- Identify how piece parts/components/software versions are traced to "where installed" for all uses.
- Identify change management processes.
- Describe the verification process that ensures that all changes have been reviewed, program impacts assessed and approved prior to implementation.
- Describe the process that ensures approved changes have been incorporated into the requirements of detail design.

- Describe the process by which waivers are assessed and dispositioned.
- Describe the status accounting reports that are available and will be provided.
- Identify where traceability/status information is retained, maintained and accessed.
- Describe the verification process used to ensure as designed to as built reconciliation.

8.3 Contractor Changes

Contractor changes fall into two categories: those directed by JPL to be implemented by the Contractor, and those requested by the Contractor to be approved by JPL. In the interest of expediting change approval/concurrence it is recommended that Contractor/JPL personnel discuss potential changes prior to submittal.

8.3.1 Class I Changes

Class I changes shall be submitted to JPL for CCB approval.

8.3.2 Class II Changes

Contractors are responsible for Class II changes and shall make provisions to provide Class II changes to JPL for concurrence with classification. JPL CM shall review the changes and, as necessary, route the changes to other JPL stakeholders. Changes found to exceed the Class II criteria shall be submitted formally as Class I changes to the JPL CCB.

8.4 Contractor Waivers

Contractor waivers shall be submitted to the CTM at the time of discovery for review/disposition by the Project CCB.

8.5 Contractor Documentation Requirements List

When required by the contracting documents or a data requirements document, Contractors/vendors, Partners and Universities shall submit Contract Data Requirements List (CDRL) items for review and/or approval. The method/format for submittal shall be as defined in the contracting documents. However, electronic submittals are preferred.

8.6 Peer Review

A CM Peer Review shall be conducted at least once every other year, during phases B through D, to verify Contractor conformance to their approved CM Plans. The peer review shall sample such activities as release and release records, change processing, status accounting, and verification and audit. Findings shall be made available to the Contractor and shall be the basis for scheduling subsequent reviews.

8.7 CM Monitoring

JPL shall monitor CM activities of Contractors/Partners/Universities to verify conformance with project requirements

8.8 Verification and Audit Participation

Contractors shall notify JPL CM of planned configuration audits internally and with subcontractors. JPL CM, along with appropriate engineering and QA personnel, may attend.

Appendix A – Acronym List

AFS	
AITS	Action Item Tracking System
AIDS	Assembly and Inspection Data Sheet
ATLO	Assemble, Test, and Launch Operations
BDD	Build Description Document
CAD	Computer Aided Design
CAN	Corrective Action Notice
CCB	Configuration Control Board
I&CMP	Information & Configuration Management Plan
CD	Controlled Document
CDRL	Contract Data Requirements List
CDR	Critical Design Review
CE	Cognizant Engineer (sometimes referred to as CogE)
CI	Configuration Item
CIPL	Consolidated Indentured Parts List
CM	Configuration Management
CME	Configuration Management Engineer
COTS	Commercial-Off-The-Shelf
CR	Controlled Record
CSCI	Computer Software Configuration Item
DMS	Document Management Specialist
DOORS	Dynamic Object-Oriented Requirements System
EAR	Export Administration Regulations
EC	TBS
ECI	Engineering Change Instruction
ECR	Engineering Change Request
EDMG	Engineering Data Management Group
EDS	Engineering Document Services
EIDP	End-Item Data Package
EPINS	Electronic Parts Information Systems Network
EP&O	
ESA	European Space Agency
EU	European Consortium
FCA	Functional Configuration Audit
FFE	Friendly Front End
FRD	Functional Requirement Document
GSE	Ground Support Equipment
GSFC	Goddard Space Flight Center
HW	Hardware
HRCR	Hardware Review Certification Record
IAO	International Affairs Office (JPL)
IAW	In Accordance With
ICD	Interface Control Document (or Drawing)
IDL	Indentured Drawing List
IPL	Indentured Parts List
IM	Information Management
IR	Inspection Report
IRD	Interface Requirement Document
ISA	Incident/Surprise/Anomaly
ISE	Information Management Engineer
IT	Information Technology
ITAR	International Traffic in Arms Regulations
I&T	Integration & Test

JPL	Jet Propulsion Laboratory
LOA	Letter of Agreement
MAP	Mission Assurance Plan
MAM	Mission Assurance Manager
MCDL	Master Controlled Document List
MCRL	Master Controlled Record List
MIRI	Mid-Infrared Instrument
MMO	Mission Management Office
MOU	Memorandum of Understanding
MRB	Material Review Board
NSPAR	Non Standard Parts Approval Request
PCA	Physical Configuration Audit
PDL	Project Document List
PDMS	Product Data Management System
PDR	Preliminary Design Review
PEM	Project Element Manager
PFR	Problem/Failure Report
PIMS	Project Information Management System
PIP	Project Implementation Plan
PM	Project Manager
PMEL	Project Master Equipment List
PRS	Problem Reporting System
PSE	Project Systems Engineer
QA	Quality Assurance
QAE	Quality Assurance Engineer
RDD	Release Description Document
SCM	Software Configuration Management
SCN	Specification Change Notice
SECR	Support Equipment (Review) Certification Record
SMP	Software Management Plan
PDL	MIRI Project Document List
SPR	Software Problem Report (aka software trouble report)
SRB	Software Review Board
SRCR	Software Review Certification Record
SRR	Software Requirements Review
SW	Software
TRR	Test Readiness Review
UPRS	Unified Problem Reporting System
WBS	Work Breakdown Structure
WVRA	Waiver, Category A (Institutional)
WVRB	Waiver, Category B (Project)

Appendix B – Controlled Documents Management Process

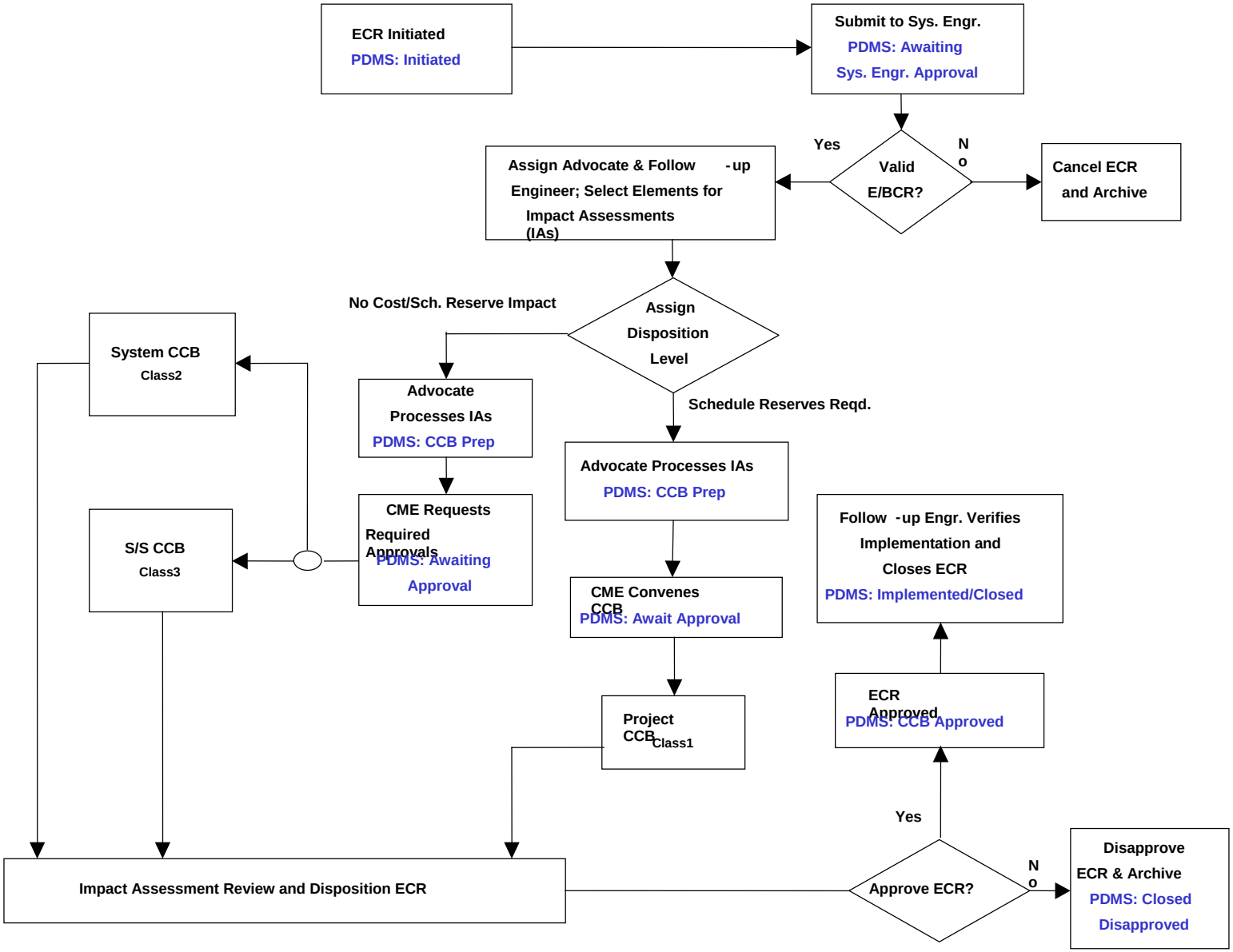
- Configuration – functional and physical characteristics of a product as defined in technical documents and achieved in the product.
- Configuration audit – examination to determine whether a configuration item conforms to its configuration documents.
- Configuration baseline – configuration of a product, formally established at a specific point in time, which serves as reference for further activities.
- Configuration board – group of technical and administrative experts with the assigned authority and responsibilities to make decisions on the configuration and its management. Also known as configuration control board or CCB.
- Configuration control – activities comprising the control of changes to a configuration item after formal establishment of its configuration documents.

Appendix C – Records Management Processes

TBS by ProjectIME and CME, Note: Identify records that follow specific process

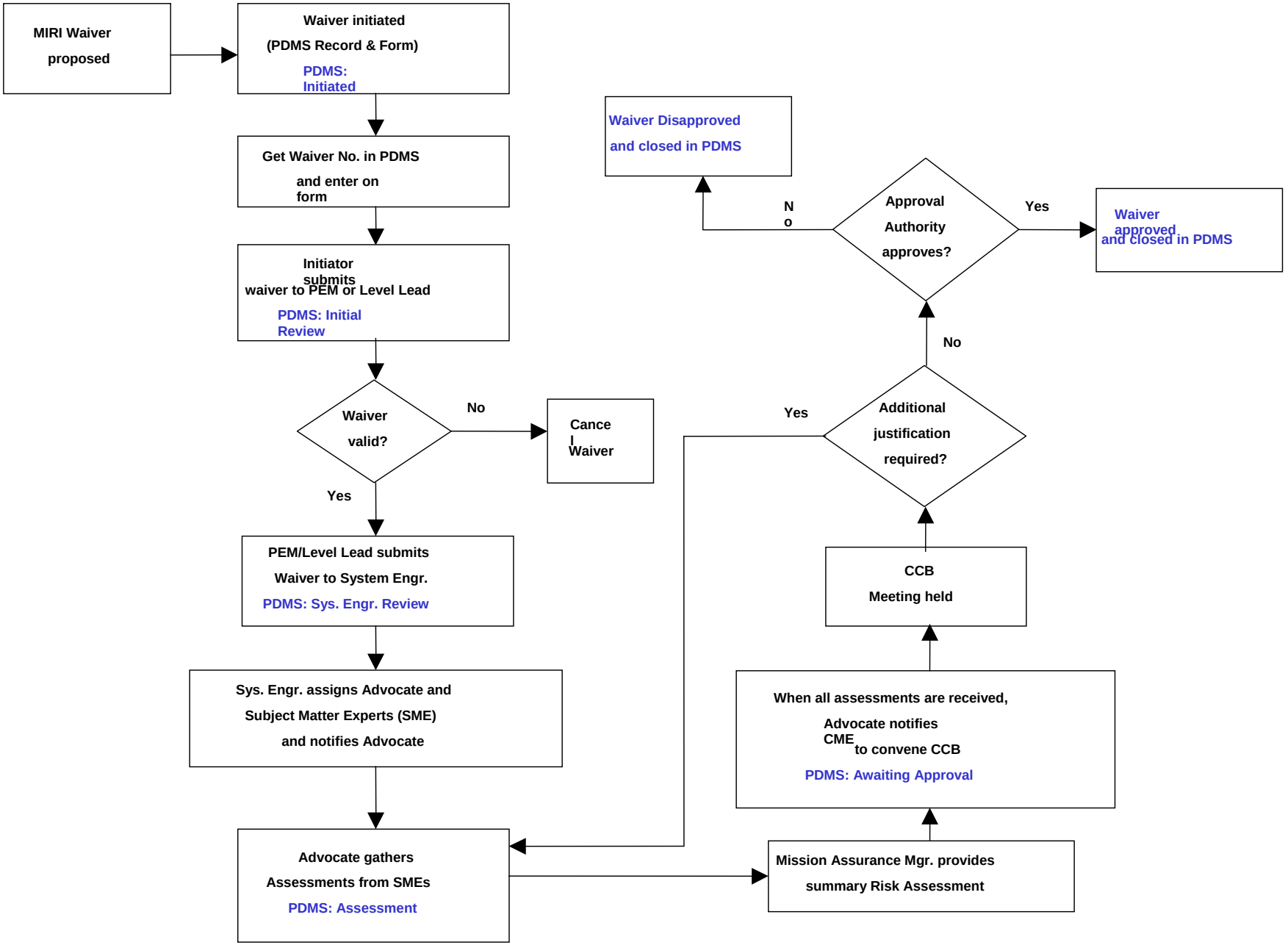
Appendix D – MIRI Engineering/Change Request Process Flow Diagram

TBR by Project CME


ECR Initiated
PDMS: Initiated
Submit to Sys. Engr.
PDMS: Awaiting
Sys. Engr. Approval
Yes
Valid
E/BCR?
No
Cancel ECR
and Archive
Assign Advocate & Follow -up
Engineer; Select Elements for
Impact Assessments
(IAs)
No Cost/Sch. Reserve Impact
Assign
Disposition
Level
Schedule Reserves Reqd.
System CCB
Class2
Advocate
Processes IAs
PDMS: CCB Prep
Advocate Processes IAs
PDMS: CCB Prep
CME Requests
Required
Approvals
PDMS: Awaiting
Approval
S/S CCB
Class3
CME Convenes
CCB
PDMS: Await Approval
Follow -up Engr. Verifies
Implementation and
Closes ECR
PDMS: Implemented/Closed
Project
CCB
Class1
ECR
Approved
PDMS: CCB Approved
Yes
Approve ECR?
No
Disapprove
ECR & Archive
PDMS: Closed
Disapproved
Impact Assessment Review and Disposition ECR

Appendix E – MIRI Waiver B Process Flow Diagram

TBR by Project CME


MIRI Waiver proposed
Waiver initiated (PDMS Record & Form) PDMS: Initiated
Get Waiver No. in PDMS and enter on form
Initiator submits waiver to PEM or Level Lead PDMS: Initial Review
Waiver valid?
No
Cancel Waiver
Yes
PEM/Level Lead submits Waiver to System Engr. PDMS: Sys. Engr. Review
Sys. Engr. assigns Advocate and Subject Matter Experts (SME) and notifies Advocate
Advocate gathers Assessments from SMEs PDMS: Assessment
Mission Assurance Mgr. provides summary Risk Assessment
When all assessments are received, Advocate notifies CME to convene CCB PDMS: Awaiting Approval
CCB Meeting held
Additional justification required?
Yes
No
Approval Authority approves?
No
Waiver Disapproved and closed in PDMS
Yes
Waiver approved and closed in PDMS

Appendix F – IM/CM Compliance Matrix

TBS by ProjectIME and CME

Appendix G – IM/CM Flight Projects Practices Compliance Matrix

TBR by ProjectIME and CME